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Title of Invention: PRESSURE-SENSITIVE ADHESIVE WATERPROOF SHEET

Application No.: Sho 57-162634

Application Date: September 17, 1982

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Specifications

1. Title of the invention
(title of the device): Pressure-sensitive adhesive waterproof sheet

2. Claims

(1) A pressure-sensitive adhesive waterproof sheet characterized by the fact that it is made by temporarily fixing onto an adhesive surface of a sheet having pressure-sensitive adhesivity, such as a non-vulcanized rubber sheet or a synthetic high-polymer sheet, a removable protective sheet that has been embossed-finished by embedding the convex face of said embossed paper in said adhesive surface.

3. Detailed explanation of the invention

This invention concerns a pressure sensitive adhesive waterproof sheet. Specifically, it concerns a waterproof sheet, such as a roofing sheet, that is applied onto the substrate material by pressure-adhesion.

Up until now, when a surface needed to be waterproofed, a waterproof sheet was first laid down, and the necessary upper structure was then formed on it. As said waterproof sheet, a non-vulcanized rubber sheet or a high-polymer sheet having a pressure-sensitive layer has generally been used.

These pressure sensitive adhesive waterproof sheets having watertightness against the joints and adhesion against the substrate display superior function as waterproof sheets. But when the substrate surface is flat and smooth and, at the same time, covers a wide area, it had a problem of separating from the substrate surface as a result of not being able to exhaust air smoothly to the outside after letting it enter into a space between the substrate surface and the waterproof sheet while the work was going on, or after a so-called bulge [or blister] had developed due to the steam from the substrate caused by heat.

In order to solve this problem, it was proposed [as an idea], and actually tried, to provide a number of long and continuous grooves on the pressure-sensitive adhesive face of the waterproof sheet described above and to allow the air to be emitted through these grooves. However, since a pressure-sensitive layer was in general flexible and could be molded [?] - even if, for example, the grooves were made at the time of manufacturing - these grooves often disappeared as time passed and ceased to exist naturally while they were kept and became completely useless by the time they were finally offered for use.

In consideration of the above-noted problems, this invention was made, having as its objective offering a pressure-sensitive adhesive waterproof sheet with grooves to emit air smoothly to the outside even when the air becomes trapped between the sheet and the substrate surface when the sheet is being laid, grooves that do not disappear at all even when kept for a long time. It [the adhesive waterproof sheet of this invention] is characterized by the fact that a removable protective sheet that has been treated with an embossing finish is temporarily applied to the adhesive surface of the sheet having pressure-sensitive adhesivity, such as a non-vulcanized rubber sheet or a synthetic high-polymer sheet having a pressure-sensitive adhesive layer, by embedding the convex face of said embossed sheet in said adhesive surface.

We explain below this invention by way of actual examples.

Figure 1 is an enlarged cross-sectional drawing of the important parts of the actual example.

Pressure-sensitive adhesive waterproof sheet A of this invention is composed as follows:

The embossed convex face 3A of a removable protective sheet 3 that has been treated with embossing finish is made to face the adhesive surface 2 of the sheet 1 having pressure-sensitive adhesivity, such as a non-vulcanized rubber sheet 1A or a high-polymer sheet 1B having a pressure-sensitive adhesive layer, and this convex face 3A is temporarily applied to the adhesive surface 2 by embedding the former in the latter.

As for the condition of the embossing finish on said removable protective sheet 3, an unevenness can be created in the direction of the thickness of the removable protective sheet 3, as shown in Figure 1, or, an unevenness (3B and 3A) can be created, as shown in Figure 2, only on one side [of the sheet].

Also, as for the condition of the concave areas (3B?) and the convex areas (3A?), it is desirable to make them continuously across the entire width and also along the entire length of the sheet 1 as much as possible, as shown in Figure 3. They can be made, as shown in the drawing, in a checkerboard fashion or in a random fashion.

As for the pressure-sensitive adhesive waterproof sheet A of this invention, the groove(s) 2B are formed using pressure on the pressure-sensitive adhesive surface 2 at the time of manufacturing, and the pressure-sensitive adhesive surface 2 is applied with a removable protective sheet 3 that has been emboss-finished in advance by fitting the concave and convex surfaces (3B and 3A) with the groove 2B. Or the removable protective sheet 3 is applied to the adhesive surface 2, and the two are processed at the same time in this condition by a press to have an uneven surface.

In addition, as shown in Figure 2, when the uneven areas (3B and 3A) are made only on one side of the removable protective sheet 3, this sheet is applied onto the adhesive surface 2, and the two are then pressed together with a press roll [or pressure roll]. As a result, a groove 2B is formed, and a removable protective sheet 3 is attached at the same time.

Since [the pressure sensitive adhesive waterproof sheet] of this invention has a composition in which a removable

protective sheet having an uneven surface is affixed onto the pressure-sensitive adhesive surface, the grooves for emitting air that are formed on the pressure-sensitive adhesive surface do not disappear even if the [adhesive waterproof] sheet is kept for a long time. At the time of using the sheet, if one peels off the removable protective sheet, clearly-defined grooves are revealed, and the air trapped between the sheet and the substrate surface at the time the sheet was laid can be exhausted smoothly. Thus, it becomes possible to have the waterproof sheet adhere to the [substrate] surface perfectly.

4. Brief explanation of drawings

Figure 1 is a cross-sectional view of an actual example of this invention. Figure 2 is a cross-sectional view of another actual example. Figure 3 is a perspective view of the actual example.

A -- pressure-sensitive adhesive waterproof sheet; 1 -- sheet having pressure-sensitive adhesivity; 1A -- non-vulcanized rubber sheet; 1B -- high-polymer sheet; 2 -- adhesive surface; 3 -- removable protective sheet; 3A -- convex surface.

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